

NASA'S CURRENT DIRECTIONS IN THE
CETDP MICRO-TECHNOLOGY THRUST AREA

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NASA's program in micro-technologies seeks to develop the advanced technologies needed to reduce the mass of Earth-orbiting and deep-space spacecraft by several orders of magnitude over the next decade. These technologies are addressed jointly by NASA's Cross Enterprise Technology Development Program and by JPL's Center for Integrated Space Microsystems (CISM). The work sponsored by NASA will be summarized and, to a limited degree, will be put in context with the work sponsored by DoD and DoE.

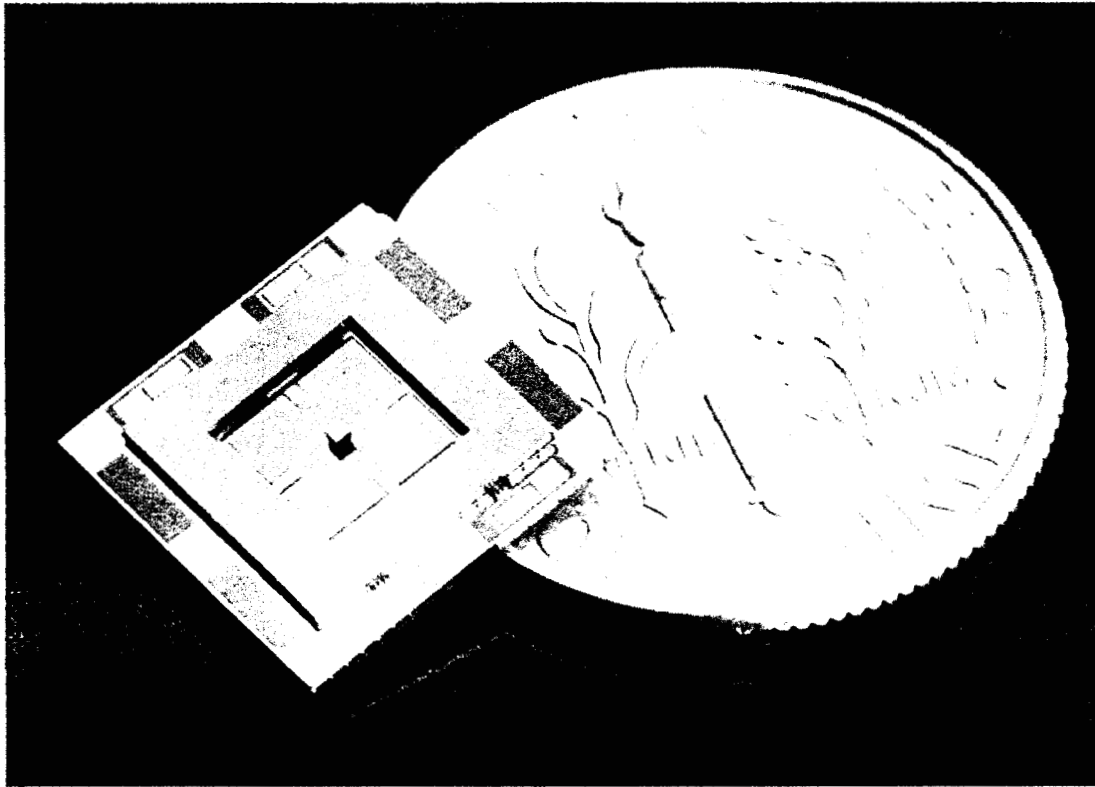
In the future the Micro/Nano Spacecraft Thrust Area will seek technology advancements that will reduce the mass of spacecraft so that smaller launch vehicles can be employed and multiple spacecraft can be launched with a single launch vehicle. Specific technology advancements will be pursued based on their ability to achieve that goal. Systems analyses are used to identify quantitative, time-phased technology goals for these technology advancements in the areas of microelectronics (digital, analog, and mixed signal) and micro-mechanical devices (Figures 1 and 2). The technology road map, developed based on these systems analyses, being pursued by NASA in the Micro/Nano Spacecraft Thrust Area will be described.

NASA's plan to pursue participation in the Micro/Nano Spacecraft Thrust Area using NASA Research Announcements (NRAs) to secure a broadly announced, peer-reviewed program while supporting NASA's need for in-house core competency in this technology area will be described. The status of the most recent NRA competition will be summarized.

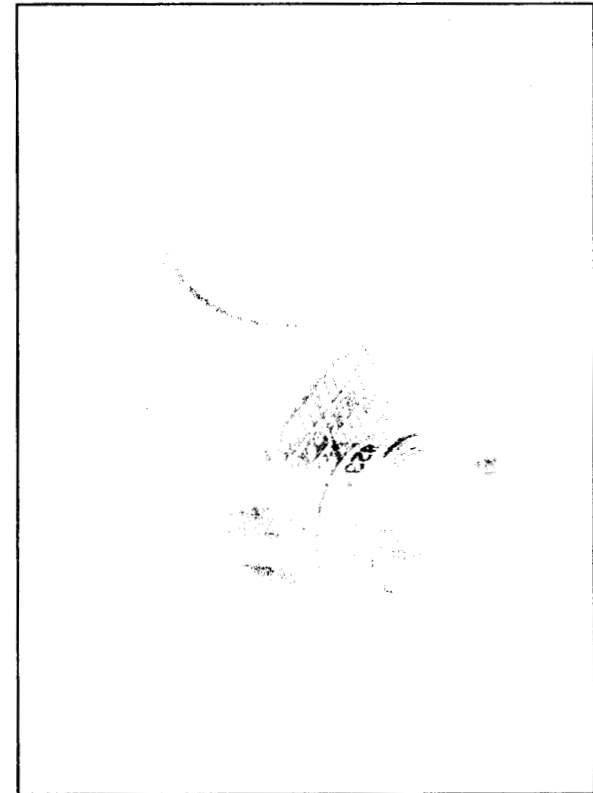
This paper will summarize the programmatic and technical status, direction and rationale of the principal portion of the Micro/Nano Spacecraft Thrust Area, that which is directed towards micro-technologies.

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μ -Gyro for Space Applications



MEMS μ -Gyro — Small Compared To a Dime



Vacuum Packaged MEMS μ -Gyro

Figure 1

Figure 2

Health and Status ASIC

